this opening, and sanious pus flowed freely from the antrum. This, and also the nasal cavity, were washed out by a spray of glycerole and water, gr. x to ℥j.

She afterward remembered that after the amalgam filling was put in the molar tooth, she had severe pain in it which lasted but a short time, and soon after the neuralgic symptoms supervened. This was the death throe of the dental pulp. After a few weeks' local and general treatment, she spent a few months in the mountains, and returned cured of her neuralgia. The strabismus was much better and improving. I have fears that an operation will be necessary, as there appears to be some organic change in the muscle.

Her husband had hemiplegia, after which she had no neuralgia for six months.

In these last cases there is a manifest hereditary tendency to neuralgias, with foci that seem to point to some local lesions. In some there are such, but in others it still remains a mystery. I trust some one may yet be found who can solve it, and bring relief to those who suffer.

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ART. III.—THE INTRA-CRANIAL AND INTRA-OCULAR CIRCULATION.

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The consideration of the relations of the intra-cranial to the intra-ocular circulation has attracted much attention of late, now that the ophthalmoscope has come into such general use a an aid in the diagnosis of intra-cranial disease. The ophthalmoscope, like all new things, has been taken up by enthusiastic friends and advocates, and some have claimed for it, in the diagnosis of intra-cranial disease, more than it can sustain.

All new remedies and appliances have had this career. At first, they are vaunted to the skies for their efficacy in such and such diseases, and it is astonishing how varied are the uses to which they are put. But soon a reaction comes, and they find their true level or sink into oblivion. Such has been, in a measure, true of potassium bromide, carbolic acid, and a host of other remedies.

There is very little doubt in the minds of those most expert in the use of the ophthalmoscope, of the very great benefits which it affords as an aid in the diagnosis of certain brain diseases. But with the introduction of the ophthalmoscope into medicine, as a means of diagnosis in diseases of the eye, permitting the observer to behold the optic nerve as it enters the eyeball, with its circulation presented fully to his gaze, it is quite natural for it to be supposed, by some, that here we should have a true and constant index of the circulation of the brain,—especially when we consider that the vessels entering and leaving the eye are but a very short distance removed from the brain; in fact, but continuations of the central vessels themselves.

But more recently, observations have been made by many to determine, if possible, whether the intra-ocular circulation, after all, is such a reliable index of the brain circulation as some have supposed. The purport of this short paper is to detail a few experiments of my own in relation to this subject; and to glance rapidly over the observations of some others.

Having a patient under my care to whom I considered it advisable to administer large doses of atropia, a good opportunity was afforded to observe the retinal and choroidal circulation, during the action of the drug. To insure accuracy in observation, I enlisted my friend, Dr. Mathewson, to aid me by his large experience with the ophthalmoscope. The patient was a young woman, aged 23; suffering from nervous disease, but with lips and cheeks of a fairly ruddy color. Her eye was examined ophthalmoscopically, previous to the administration of the atropia. The disc and vessels were found to be normal, and the latter were, perhaps, a trifle smaller than is seen ordinarily.

I then gave, hypodermically, one-fifteenth grain atropia: in ten minutes after, she experienced great dryness of the throat and fauces and dizziness. Half-an-hour after the injection her eye was again examined, but not the least change perceived.

Later in the day she had vomiting and slight delirium. The next day her face presented the most decided change: quite pale, lips completely blanched, pupils half dilated, and there was considerable muscular weakness. Her eye was again examined, but not the least change perceived. I administered another injection of one-half grain atropia: she soon had all the effects of the drug. The eye was examined, but still no change was observed. The very marked pallor of face and lips, in this patient, leaves no doubt that the vessels were in a state of contraction.

The next experiment was on myself. At 12.30 P. M., pulse 76 (normal), full and strong. Eyes examined by Dr. Mathewson: vessels and disc quite normal; refraction, emmetropic. Conjunctiva healthy in appearance; no redness; vision was not tested at the time, but from previous examination it is known to be $\frac{20}{20}$.

I then took 20 grains of quinia sulphate on an empty stomach. At 1.15 P. M. a feeling of fulness in head, muscular weakness, slight trembling, feeling of warmth over whole body, head and face especially, hot burning feeling in eyes, such as is experienced in high febrile states, pulse 100. Slight tendency to dizziness when moving about.

1.30. Feeling of pressure in both ears very decided, but most in right, all the above symptoms much increased except the trembling.

1.45 P. M. Additional 10 grains of quinia taken.

At 1.55 P. M. Feeling of heat in face and head greatly increased; all the other symptoms increased; great dizziness and unsteadiness of gait. Pulse 100, much weaker than normal, and the beats are not of equal force. 2.05 P. M. Dizziness, muscular weakness, trembling, pressure in ears and head much increased; no tinnitus aurium; pulse 128; face markedly flushed and hot to touch. Conjunctiva much injected, ocular and palpebral. Vertigo now even when sitting. Drooping of upper lids, vision blurred at times. Ophthalmoscopic examination shows no increase in the vascular condition of fundus. Otological examination shows membrana tympani healthy, no vessels present, not even along handle of the malleus.

At 2.45. Symptoms all increased; pulse, 132; respiration, 16.

3.30. All the symptoms increased with the addition of tinnitus aurium; most in right ear; ophthalmoscopic examination shows no increase in size of vessels of fundus. Otological examination shows very decided injection of membrana tympani, especially marked along handle of malleus; portion of meatus adjacent to membrane also injected. The marked conjunctival injection and drooping of the upper lids have passed away, difficulty of vision exists, especially when in the street. Accommodation for near and far objects markedly affected—slow—vision $\frac{20}{20}$, and not acute.

Hearing much affected in addition to the tinnitus aurium.

H. D. Watch at 1; both sides; voice (ordinary conversational) at 20 feet and not sharp.

When the external portion of the auditory meatus is touched with the finger, there is a feeling of numbness. Decided huskiness of voice.

6 P. M. No alteration in condition of fundus.

H. D. A. D. not as well. A. S. hears watch slightly better. Hearing to voice not as good as at previous examination. Tinnitus aurium has ceased.

Went to bed, but found it impossible to sleep until about 1 or 2 A. M.

My next experiment was on myself with nitrite of amyl.

At 11 A. M. Dr. Mathewson examined my eyes—pulse, 76.

I then inhaled Nitrite of Amyl, dropped on cotton; in a few seconds I perceived the full effect. Fullness in head, hot and flushed face, injected conjunctiva, and momentary pressure in ears.

No change whatever could be perceived in the ocular circulation, although Dr. Mathewson kept up the examination during the whole time.

After allowing the effect of this first dose to pass off, an examination of the ear was made. No vessels were to be seen on the drum membrane. I then inhaled another dose of nitrite of amyl, but not the least vessel made its appearance on the membrane.

The effect of the quinia on myself, shows a most decided cerebral hyperæmia, and yet no change whatever in the intra-ocular circulation. All the vessels exterior to the globe, were in a dilated condition—the conjunctival vessels. The only thing which appears to point to increased intra-ocular circulation, is the impairment of function of the ciliary muscle if we suppose that to be dependent on a hyperæmic condition. But I think the presumed condition of the ciliary muscle is due to impairment of its nerve supply rather than a hyperæmic condition, and analogous to the muscular trembling and unsteadiness of gait—accompanying symptoms having their cause in certain states of the cerebro-spinal centres.

A few years ago Dr. Hammond experimented on himself with quinia, (Psychol. and Med. Legal Journal, Oct. 1874,) for the purpose of confirming his opinion that it produces hyperæmia of the cerebro-spinal centres.

Dr. Hammond took ten grains quinia. At 8.30 P. M. his eyes and ears having been previously examined by Dr. Roosa. V. $\frac{20}{20}$; fundus normal; emmetropic; pulse, 90.

Membrana tympani far from injection. In half an hour Dr. H. had the physiologic effect. Injected conjunctiva and flushed face. In three-quarters of an hour the optic papilla were pinkish. In an hour and a half he had tinnitus aurium and injection of membrana tympani. The ears were particularly injected, with local spots of such decided congestion, that they appeared almost like ecchymosis.

Vision was not affected.

The dose I took was three times that of Dr. Hammond. No injection of optic papilla in my eye. In Dr. Hammonds it was marked.

(Dr. H. weighs about 100 lbs. more than I do.) Dr. H. is certainly very susceptible to the drug.

How shall we account for the difference in the two eyes. We cannot place the appearances recorded by Dr. Roosa to the score of "expectant attention." Dr. R. has himself assured me that the flushing of the disc's was marked. He has also examined other patients under the influence of quinia, and in only one other case has he observed flushing of the optic disc, (Trans. American Otological Society,) but in every one of these cases was there injection of the membrana tympani.

Evidently from some individual peculiarity then, it is that we observe injection of the papilla, and as a rule it is not present under the action of quinia, and from the fact that we have in every case injection of the drum membrane showing decided cerebral hyperæmia, we have strong evidence on which to conclude that the intra-ocular circulation is independent of the intra-cranial.

Dr. E. G. Loring, one of the most expert ophthalmoscopists living, examined a boy's eyes while he was being galvanized by Dr. John J. Mason, and he was unable to perceive any material change in the intra-ocular circulation.

Dr. Loring has performed many other experiments, and made examinations tending in the same direction, all with a similar result, which were detailed by him in a paper read before the New York Society of Neurology. Mr. Goodhart, (Practitioner, January, 1875,) says that he took amyl, and Mr. Barder examined his eyes; the veins of the disc were seen to become enlarged, varicose and tortuous, the arteries were small but not abnormally so.

In the above detailed experiment on myself with amyl, not the least change could be observed in the circulation of the fundus.

Dr. I. H. Arbuckle has also made some experiments with amyl on man, and failed to find in any case the least alteration of the intra-ocular circulation, although he had all the physiological effects of the drug.

Dr. Arbuckle has also performed a series of experiments on rabbits with those drugs which are believed to cause either an increase or diminution of the circulation of the nervous centres.

The eyes were examined previous to their administration, and all during the time they were under the influence of the drug.

The drugs he experimented with were: nicotine, atropia, aconitia, hydrate of chloral, nitrite of amyl, prussic acid, strychnia, hyoscyamia, morphia: nitrite of amyl and atropia together, nitrite amyl and picrotoxine, morphia and picrotoxine.

In experimenting with these drugs, although Dr. Arbuckle administered them to their fullest effects, he was unable to perceive the least change in the retinal and choroidal circulation.

Here if any changes had taken place, they would have been easy of detection, owing to the fact that in the rabbits, the nerve fibres after entering at the disc, still retain their neurilemma in the retina for a considerable distance, and spread out in a fan-like manner, thus affording a bright white back ground to the vessels. In addition, Dr. Priestly Smith's, demonstrating ophthalmoscope was used, thus keeping the fundus in constant view. He therefore, concludes from these experiments, that cerebral hyperæmia may exist without presenting any evidence of it in the circulation of the eye, and that more reliance is to be placed in the diagnosis of cerebral hyperæmia or injection of the conjunctiva and flushed face than on any ophthalmoscopic appearances.

Dr. Arbuckle also examined the eyes of insane persons, and was unable to detect anything in the eye diagnostic of the existing cerebral condition.

Previously Drs. Noyes and Loring had done the same and arrived at virtually the same conclusion. Dr. Clifford Albutt thinks that he can pick out epileptics from the condition presented by their retinal circulation. Other expert ophthalmoscopists have been unable to do so.

In considering the above experimental evidence, there appears ample proof that the intra-ocular circulation is independent of the intra-cranial.

The experiments with quinia on man are the most conclusive—in every case we have a most decided cerebral hyperæmia produced. Every symptom shows it, and the injection of the membrana tympani in every case is most incontestable evidence of this condition, and yet how little evidence the eye affords us of this intense cerebral hyperæmia—as it existed in myself especially. We therefore can expect little aid from ophthalmoscopic appearances in the diagnosis of the simple functional diseases of the brain—deviations from a normal circulation—as cerebral anaemia and hyperaemia.

And how is this independence of the intra-ocular circulation maintained? No experiments have ever been performed to throw any light on this point.

This independence is undoubtedly sustained as suggested by Dr. Loring, (paper before Society of Neurology, N. Y.) by the normal intra-ocular tension—that tension of the eye which depends upon the normal adjustment of its various solid and fluid parts to each other.

We have examples of the effect of deviation in this normal tension, in glaucoma for instance. Probably one form of glaucoma is due to proliferation of the corpus vitrium.

It is easy to see the importance of having the circulation of the eye independent of the many, and oft repeated, changes to which the circulation of the brain is subject, causing those frequent vacillations of the mental state with which we are all familiar. Such often repeated deviations of the intra-ocular circulation would undoubtedly be non-conducive to perfect unvarying vision.

ART. IV.—ON THE PLEA OF INSANITY, AS AN EXCUSE FOR THE COMMISSION OF CRIME.

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THE plea of insanity, as an excuse for the commission of crime, is made so frequently of late, as to attract the attention, not only of alienists, and physicians, but also of thoughtful men among the general public.

The secular press has occasionally animadverted with not